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THE BOWER-BIRDS OF AUSTRALIA

THE SPOTTED BOWER-BIRD.

II.

The striking peculiarities which distinguish the animals, plants and fishes of Australia have often attracted the attention of observers in that country. It is altogether a remarkable circumstance, with respect to Australian quadrupeds, that (with the exception of a very small number of species) all of them are peculiar to that land, and not to be found in any other part of the known world.

In a recent article we described some very beautiful Australian birds, whose singular habit of building bowers as places of entertainment and general resort has been the subject of interesting inquiry. Our illustration represents another species of Bower-bird, described by Mr. Gould as the Spotted Bower-bird (*Chlamydera maculata*), the general habits of which do not greatly differ from those of the species described in our last article; while in the curious art of building an artificial bower, or playing-ground, there is a close similarity between the two. Mr. Gould was so fortunate as to discover several of these bowers during a journey to the interior, and one of the finest was brought to England and presented to the British Museum. These bowers were found on plains where small trees were scattered, as well as in the brushes clothing the lower hills. They differ from those of the Satin Bower-Bird in being longer and more avenue-like, some of them being three feet in length. They are built of twigs, but are beautifully lined with tall grasses, so disposed that their heads nearly meet. The decorations consist of bivalve shells, crania of small mammalia, and other bones. The whole of the bower and its decorations afford beautiful evidences of design, particularly in the manner in which stones are placed within the bower, to keep the grasses firmly in their places. Little pathways of these stones also diverge from the entrance of the bower on each side, while a large collection of decorative materials is heaped up at each end of the avenue. In some of the larger bowers which appeared to have been resorted to for many years, there was nearly half a bushel of bones, shells, &c., at each entrance. Small bowers are found, in some instances, composed almost entirely of grasses: these appeared to be the commencement of a new place of rendezvous. Mr. Gould frequently found the structures of the Bower-birds at a considerable distance from the rivers whence alone they could have procured the shells necessary for the adornment of their bower; thus proving that the taste for decoration which exhibits itself

in these birds is gratified at a great expense of toil and perseverance. The birds feed only on seeds and fruits, so that it is impossible that the bones, &c., should be collected for any other purpose than ornament; indeed they only choose those that have been bleached perfectly white, in the sun, or have been roasted by the natives and by that means whitened.

I fully ascertained (says Mr. Gould) that these runs, like those of the Satin Bower-bird, formed the rendezvous of many individuals; for after secreting myself for a short space of time near one of them, I killed two males, which I had previously seen running through the avenue.

The case of this bird may perhaps induce our readers to regard in a new light the mental powers which have been bestowed on the lower animals. Under the common but vague term, *instinct*, we are accustomed to place all the actions, feelings, and affections of animals, as if they were of a totally different kind to those which are observable among mankind. Yet a little attention to facts would dissolve much of the illusion created by the use of this word, and would tend to prove that animals possess faculties of mind closely analogous to those of the human race, though limited by the Almighty to the purposes of their being, and incapable of improvement and transmission from one generation to another.

We see in animals, as among ourselves, the clearest proofs of parental affection, as in the partridge and her brood; of emulation, as in the race-horse, or singing-bird; of a love of country or of particular districts, as in the swallow, revisiting the same spot year after year; of conjugal affection, as in the eagle; of tyranny, as in some birds over others; of love of accumulation, as in the magpie; and of the love of liberty in all. It has also been proved by experience that the mere association of animals in a place of confinement will produce a kind of friendship among them though their natures may be very dissimilar; thus it is a common thing to see cats, rats, rabbits, starlings, guinea-pigs, &c., exhibited in one cage, and apparently on the most affectionate terms with each other. Friendships have also existed between the lion or tiger and the dog, as well as between various other animals of most discordant natures; and it is well known how much it is in our power to attach animals to ourselves by kind treatment, independently of the mere love of food. Such attachments have been produced, not merely in the ordinary domesticated animals, but on nearly every animal on which the trial has been fairly and patiently made. Thus we have instances on record of frogs, toads, serpents, and insects, becoming attached to man.

Other mental emotions are to be traced in animals almost as clearly as if they had words to express them. What lady that is fond of *pets* has failed to notice the jealousy and rivalry that exists among them? Does not the lap-dog growl in anger at the caresses bestowed upon the kitten; and does not the long petted and observant cat walk away in anger and disdain, when any new favourite is introduced? These are matters of common remark, and so far does the feeling go, that in an instance we have lately heard of, a petted animal (we are not sure whether it was the cat or dog,) became so jealous of an infant as to endanger its safety. With such instances before us, we cannot fail to recognise the truth of the following remarks of a late eminent writer.

If it has been said that animals are without retrospect or foresight, and that they act only under immediate impulses, this is not only bad metaphysical reasoning, but is not true as fact. Without retrospect, there could be no experience: memory and recollection are retrospect; and experience is proved by education. Foresight, or anticipation, is necessary to volition; but the practical proofs of its existence are abounding. There is even a special gift of foresight respecting weather, to many animals; the very nature of which we cannot conjecture; possessing nothing analogous. When it is said that they do not reflect or think, what is the animal doing when it is watching its prey, or the dog when guarding its master's clothes, or the bee when it has been defeated in the construction of its cell, and is planning an expedient? The operations of thought can be traced in the very countenance of a dog. And the dreaming of this animal is a proof of thought; the attempts to run and bark are produced by reflection on ideas in the memory, during that imperfect sleep which constitutes dreaming: and such reflection is thought.

The same writer remarks that there is no apparent reason for allowing to animals the power of imagination, at least in the wide sense in which we generally understand that term; yet if the sense of beauty, and the sense of music, are to be ranked under this head, we have no right to deny to them a portion of this faculty. This brings us back to the more immediate subject of our article, *i. e.*, the taste and love of ornament displayed by the Bower-birds of Australia. The sense of beauty must be strong in these birds, if it leads them, as described above, to construct fanciful bowers, and deck them out with shells and bleached bones, merely as places of rendezvous, or recreation, and without any immediate purpose as it respects the rearing of their young. Such instances deserve to be remembered as additional proofs of the beneficent gifts of the Creator to the lower animals, whose sources of mental enjoyment may be far richer than we have yet been accustomed to suppose them.

ON THE DOMESTICATION OF ANIMALS FOR PLEASURE ONLY.

THE caging of birds, and the domestication indeed, of any animal, merely for man's pleasure, has been objected to upon the charge of cruelty.

There are none of our customs (says a natural historian) which more mark our selfishness that that of keeping singing-birds in perpetual confinement, making the pleasure of our ears their misfortune; and that sweet gift, which God has given them, wherewith to make themselves happy, and the country delightful, the curse of their lives. If we were contented, however, with taking and rearing young ones, which never knew the actual blessing of liberty, or of propagating them in cages or aviaries, the evil would not be so enormous. But the practice of seizing singing-birds, which have always enjoyed the freedom of the earth and air, in summer, when they are busy with the pleasant care of their nests, or young broods, and subjecting them to a close prison, is detestable—doubly detestable in the case of *migratory* birds. They have not merely the common love of liberty, but the instinct of migration to struggle with; and it may be safely asserted, that out of every ten nightingales so caught, nine pine away and die. Yet the capture of nightingales is very extensively practised. The bird-catchers declare them to be the most easily taken of all birds; and scarcely can one of these glorious songsters alight in a copse or a thicket, but these kidnappers are upon it. Some of these men assure me that the female birds arrive about ten days later than the males, whose songs give notice of their retreats, on hearing which the females alight; therefore, when nightingales first appear, the bird-catchers are almost sure of taking only male birds, which, being the singers, are the only ones they want. The nightingale, a bird which God has created to fly from land to land to crown the pleasantness of Spring with the most delicious music, or a lark, which He has made to soar, in the rapture of its heart, up to Heaven's gates, "cribbed, cabined, and confined," in a narrow cage by man, is one of the most melancholy objects on earth. Let those who have hearts for it keep them, and listen to them with what pleasure they may; for my part, while I am myself sensible of the charms of freedom, and of the delights of the summer fields, I shall continue to prefer the "wood notes wild" of liberty to a captive's wail.

This argument, which is excellent both in feeling and judgment with respect to the confinement of animals whose habits and instincts are opposed to domestication, does not hold good against the custom of rearing others of more social dispositions. Suddenly remove a full-

grown bird from the open woodlands to the narrow prison of a cage, and its plaints and flutterings are painful proofs of the cruelty of the act; but those which are either reared at home, or caught while young, and are early habituated to artificial confinement, are undoubtedly more cheerful, and songsters kept under these circumstances sing more continuously than those which are exposed to the inclemencies of the weather and occasional lack of food. Besides in the shelter of the dwelling-house they are secure from the attacks of formidable birds of prey, and instead of a thousand enemies find an intelligent protector and companion. It is quite as possible for us to fritter away moral as physical strength in false refinements. If man possesses the right of enslaving beasts for carrying burdens, and easily brings himself to the daily necessity of sacrificing whole herds for a supply of food, there can exist no reason why his home should not be enlivened by the charms of natural music, or with the gambols of instinctive creatures. Moreover, the collection of a Zoological Garden, or of a Menagerie, where thousands of different kinds of animals are collected together for the amusement and instruction of the public, (institutions of which all approve,) could not be justified if the private domestication of only one or two species were deemed incompatible with humanity.

The most conclusive fact, however, is that the domestication of animals is conducive to their longevity, and longevity has ever been considered the test of animal well-being.

Herbivorous animals (says Mr. Jesse,) probably live longer than carnivorous ones, vegetable food being most easily obtainable in all seasons in a regular and requisite supply; whereas animals that subsist on flesh, or by the capture of prey, are necessitated at one period to pine without food, and at another are gorged with superfluity: and when the bodily powers of rapacious creatures become impaired, existence is difficult to support, and gradually ceases; but with herbivorous animals in the same condition, supply is not equally precarious, or wholly denied. Yet it is probable that few animals in a perfectly wild state live to a natural extinction of life. In a state of domestication, the small number of carnivorous animals about us are sheltered and fed with care, seldom are in want of proper food, and at times are permitted to await a gradual decay, continuing as long as nature permits; and by such attentions many have attained to a great age; but this is rather an artificial than a natural existence. Our herbivorous animals being mostly kept for profit, are seldom allowed to remain beyond approaching age, and when its advances trench upon our emoluments by diminishing the supply of utility, we remove them. The uses of the horse, though time may reduce them, are often protracted; and our gratitude for past services, or interest in what remains, prompts us to support his life by prepared food of easy digestion, or requiring little mastication, and he certainly by such means attains a longevity probably beyond the contingencies of nature. I have still a favourite pony,—for she has been a faithful and able performer of all the duties required of her in my service for upwards of two-and-twenty years,—and, though now above five-and-twenty years of age, retains all her powers perfectly, without any diminution or symptom of decrepitude; the fineness of limb, brilliancy of eye, and ardour of spirit are those of the colt, and though treated with no remarkable care, she has never been disabled by the illness of a day, or sickened by the drench of the farrier. With birds it is probably the same as with other creatures, and the eagle, the raven, the parrot, &c., in a domesticated state attain great longevity; and though we suppose them naturally tenacious of life, yet, in a really wild state, they would probably expire before the period which they attain when under our care and attention. And this is much the case with man, who probably outlives most other creatures; for though excess may often shorten, and disease or misfortune terminate his days, yet naturally he is a long-lived animal. His "three score years and ten" are often prolonged by constitutional strength, and by the cares, the loves, the charities of human nature. As the decay of his powers awakens solicitude, duty and affection increase their attentions, and the spark of life only expires when the material is exhausted.

Some of the most interesting descriptions upon record of the habits of the inferior animals have been written from observations of domesticated species. These breathe throughout the tenderest care for all God's creatures, and are a proof, if one were wanting, of the humanizing influences of a study of nature.

I would advocate, (says Mr. Jesse,) the cause of all creatures, had I the privilege of knowing the excellency of them; not willingly assigning vague and fanciful claims to excite wonder, or manifest a base pride by any vaunt of superior observation; but when we see, blind as we are, that all things are formed in justice, mercy, truth, I would tell my tale as a man, glory as a Christian, and bless the gracious power that permitted me to obtain this knowledge.

As an example of the field of interesting observation which the domestication of animals affords, we will conclude with the memoir of a beaver, by Mr. Broderip.

The animal arrived in this country in the winter of 1825, very young, being small and woolly, and without the covering of long hair which marks the adult beaver. It was the sole survivor of five or six which were shipped at the same time, and it was in a very pitiable condition. Good treatment quickly restored it to health, and kindness soon made it familiar. When called by its name, "Binny," it generally answered with a little cry, and came to its owner. The hearth-rug was its favourite haunt; and thereon it would lie stretched out, sometimes on its back, sometimes flat on its belly, but always near its master. The building instinct showed itself immediately it was let out of its cage, and materials were placed in its way, and this before it had been a week in its new quarters. Its strength, even before it was half-grown, was great. It would drag along a large sweeping-brush or a warming-pan, grasping the handle with its teeth so that the load came over its shoulder, and advancing in an oblique direction till it arrived at the point where it wished to place it. The long and large materials were always taken first; and two of the longest were generally laid cross-wise, with one of the ends of each touching the wall, and the other ends projecting out into the room. The area, formed by the crossed brushes and the wall, he would fill up with hand-brushes, rush-baskets, books, boots, sticks, cloths, dried turf, or anything portable. As the work grew high, he supported himself on his tail, which propped him up admirably, and he would often, after laying on one of his building materials, sit over against it, appearing to consider his work. This pause was sometimes followed by changing the position of the material, and sometimes it was left in its place.

After he had piled up his materials in one part of the room (for he generally chose the same place), he proceeded to wall up the space between the feet of a chest of drawers which stood at a little distance from it, high enough on its legs to make the bottom a roof for him; using for this purpose dried turf and sticks, which he laid very even, and filling up the interstices with bits of coal, hay, cloth, or anything he could pick up. This last place he seemed to appropriate for his dwelling; the former work seemed to be intended for a dam. When he had walled up the space between the feet of the chest of drawers, he proceeded to carry in sticks, cloths, hay, cotton, and to make a nest; and when he had done, he would sit up under the drawers, and comb himself with the nails of his hind feet. The huge webbed hind-feet of the beaver turn in so as to give the appearance of deformity: but if the toes were straight, instead of being incurved, the animal could not use them for the purpose of keeping its fur in order, and cleansing it from dirt or moisture. Binny generally carried small and light articles between his right fore-leg and his chin, walking on the other three legs; and large masses, which he could not grasp readily with his teeth, he pushed forwards, leaning against them with his right fore-paw, and his chin. He never carried anything on his tail, which he liked to dip in water, but was not fond of plunging in his whole body.

LUNAR RAINBOW.

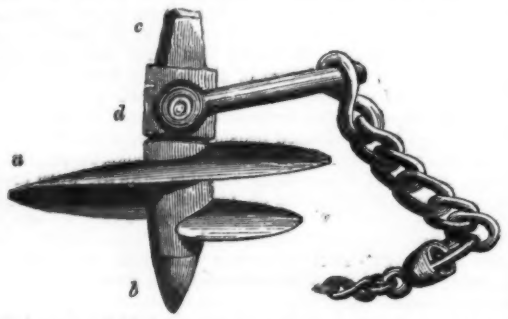
Lo! on the soft spray of the waterfall
The lovely lunar phantom! All at once,
No warning given by some uncertain light,
The apparition spans the black abyss,
And it is lustrous; fancy dreams she sees
A golden palace rise; the gorgeous walls
Are pictured o'er with mosses many-dyed;
Bright as in day the clustering wild flowers hang,
Only their glory softer.—JOHN WILSON.

LIGHTHOUSES ON SAND.

THOSE dangerous approaches to a coast which, from the nature of the soil, have not till very lately admitted of the erection of a permanent lighthouse, are usually indicated to the navigator by floating lights: but these, being nothing more than large lanterns suspended in the rigging of a vessel, necessarily possess but feeble illuminating power. This power is still further diminished in a gale of wind, when it is most wanted, by the pitching and floundering about of the vessel: every now and then she is submerged in the trough of the sea; covered with spray and drift; or, what is most to be dreaded, she is liable to be blown away from her moorings, an accident productive of the most disastrous consequences to life and property.

The general history of lighthouses conveys some notion of the difficulty and danger of planting a lighthouse on the solid rock in a stormy sea: we may naturally suppose that this difficulty and danger must be eminently increased in erecting a permanent residence on the shifting sands. Such, however, is by no means the case: one of the recent triumphs of engineering has proved that it is not always folly to build a house upon the sand.

This remarkable result has been accomplished chiefly by means of Mitchell's screw mooring, represented in our cut prepared for use. *a* is a spiral or screw flange, of about one turn and a half, having a hollow cylindrical



centre, the whole being of cast iron in one piece; *b*, is a wrought iron spindle which passes through the cylindrical socket of the screw flange, somewhat tapering in form, and when driven up tight is fixed thereto by a forelock passing through both; it is formed with a square head *c*, to receive the key for screwing it into the ground; *d* is a collar of wrought iron, fitted so as to turn freely on the upper part of the shaft of the spindle below the collar.

The attention of the Trinity House having been called to this instrument, it was considered applicable to the establishment of lighthouses on sands, and accordingly a series of experiments was undertaken, at the cost of that honourable body. The spot selected for the purpose was on the verge of the Maplin sand, situate at the mouth of the Thames about twenty miles below the Nore, forming the north side of the Swin or King's Channel, which on account of its depth is much frequented by large ships, as also by colliers and other vessels from the North Sea. The sand is of a shifting character, and is dry at low water spring tides, and hitherto a floating light has been maintained upon it. On this spot it was proposed to erect a fixed lighthouse of timber-framing, with a lantern and residence for the attendants.

In the month of August, 1838, operations were commenced by inserting nine of Mitchell's mooring screws, each four feet and a half in diameter, and furnished with shafts of wrought iron about twenty-five feet in length and five inches thick. One of these served as a centre to eight screws, which occupied the angles of an octagon forty-two feet in diameter. The screws were turned into the sands to the depth of twenty-one and a half feet, the upper extremities being left standing about five feet above the surface of the sands. For the purpose of fixing the screws, a stage or raft of timber, thirty feet square, was floated over the spot, with a capstan in the centre which was made to fit on the top of the iron shaft and firmly keyed to it; a power of about thirty men was employed for driving the screws, and their labours were continued until their united force could scarcely turn the capstan. This stage or raft, which had been formed in two thicknesses crossing each other at right angles and bolted at their intersection, was, as a precautionary measure, allowed to remain. It covered the whole of the site within the piles, and also extended some distance beyond them. A curb about eighteen inches high was raised round this stage; on its surface was arranged a quantity of brushwood, and then about two hundred tons of rough stone, which sank the stage into the ground and prevented it from being displaced; between the spaces of the stage and the brushwood the sand was allowed to wash its way, and it soon filled the interstices of the stone. The whole mass soon became embedded below the surface of the sand, and gave considerable lateral support to the piles, and formed a solid body for the water to wash upon.

In this state the whole was allowed to remain for about two years, during which time every change in the surface of the sand was observed, and although early in the year 1839, violent storms occurred, yet the screw piles stood firmly, and the sand at no time was lowered more than three feet. In August, 1840, the raft was found to have completely settled down, the piles were as firm as if they had been screwed into clay, a lighthouse was therefore erected within the short space of three months, and on the 10th of February, 1841, a dioptric fixed light was exhibited off this dangerous spot, and was visible ten miles off in all directions.

But while the preparatory steps for this lighthouse were being taken, a screw pile lighthouse was begun and completed at Port Fleetwood, on the Wyre, near Lancaster, which being the first of the kind ever constructed, deserves particular notice.

The preparatory stages were of a similar nature to those already described. The foundation was formed of seven screw piles, six occupying the angles of a hexagon forty-six feet in diameter, and the seventh being placed in the centre. From each screw proceeded a pile fifteen feet in length, at the upper end of which was another screw for securing a wooden column. These columns were prepared of Baltic timber, the one in the centre was fifty-six feet, and each of the remainder forty-six feet in length, bound firmly round with iron hoops, and coated with pitch.

The framing upon which the house stands is firmly secured round the centre column, and to the heads of the outer columns, by means of hollow cast-iron capitals let down over the heads of the columns, and secured with screw bolts. To give lateral strength to the building, round iron angle braces were applied, by which means a resisting power equal to at least three hundred and fifty tons, is presented in every direction.

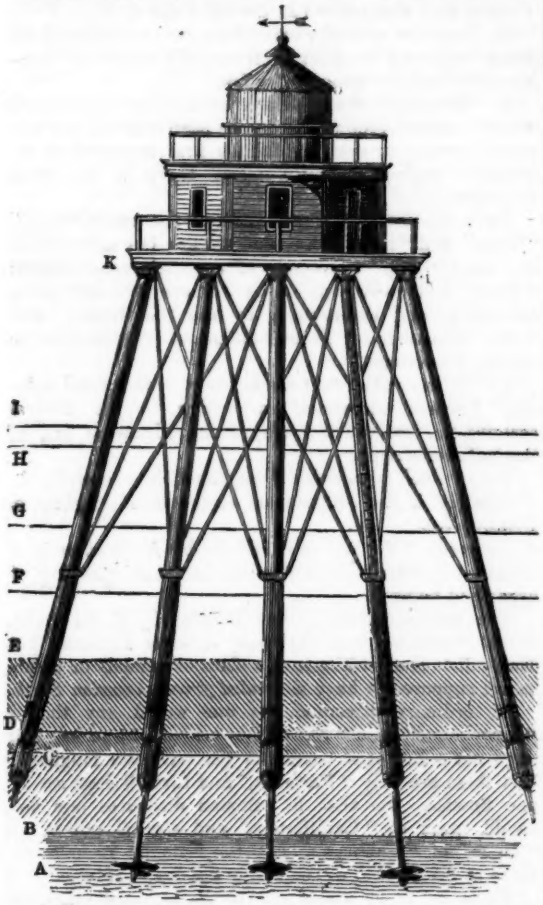
The platform upon which the house stands is twenty-seven feet in diameter, and nine feet high; it has an outside door and three windows, and is divided into two apartments, one having a fire-place: the floor is tiled, and the walls and ceiling are lathed and stuccoed; access to the platform is secured by means of a Jacob's ladder of wrought iron, secured to one of the columns; access to the lantern is by a winding stair within the house.

From the summit of the house rises the lantern; it is twelve-sided, ten feet in diameter, and eight feet high. The light is thus elevated about forty-six feet above low water level. It is of the dioptric kind, and is bright, steady, and uniform, ranging over an horizon of eight miles, and visible at the distance of ten miles from a

coaster's deck. During foggy weather, a bell is tolled by machinery. Tide time for vessels of twelve feet draught is also denoted by signals. Signals put out by vessels requiring a Wyre pilot will also be understood at this lighthouse, where corresponding signals are hoisted until the pilot is provided.

This admirable and useful structure was erected in two of the shortest day months in the year, in which time daylight did not occur at any low-water period; the workmen therefore had to depend on torches and moonlight. Nor is the portability of this form of building its least advantage: should there occur any local changes which might threaten the safety of the house, it can be taken down, and erected in another site within a month.

The structure of a screw pile lighthouse will be better understood by the following cut and letters of reference.



A. Formation of Marl, into which the screws are driven to the depth of 10 feet below low water mark.
B. Substratum of Sand.
C. Low water, equinoctial springs.
D. Low water, ordinary tides, 2 feet above ditto.
E. Do. neap tides, 9 do.
F. Half tide level, 15 do.
G. High water neaps, 21 do.
H. Do. ordinary tides, 28 do.
I. Do. equinoctial springs, 30 do.
K. Underside of Platform 45 do.
Centre of the Dioptric light in Lantern 60 do.

"You have had a great loss," says the poet Cowper, in an affecting letter to a bereaved friend, "and a loss which admits of no consolation, except such as will naturally suggest itself to *you;* such, I mean, as the Scripture furnishes. *We must all leave, or be left;* and it is the circumstance of all others that makes long life the least desirable, that others go while we stay, till at last we find ourselves alone, like a tree on a hill top."

EASY LESSONS ON REASONING.

Lesson XVI.

Part I.

§ 1. Altho' sundry kinds of Fallacies have been from time to time noticed in the foregoing Lessons, it will be worth while to make some further observations thereon.

By a "Fallacy" is commonly meant "any *deceptive* argument or apparent-argument, whereby a man is himself convinced—or endeavours to convince others—of something which is not really proved."

Fallacies have been usually divided into two Classes: those in the *form*, and those in the *matter:* tho' the difference has not been in general clearly explained.

The clearest way of proceeding will be to consider a "Fallacy-in-form" as one in which the Conclusion does not really *follow* from the Premises; and a "Fallacy-in-matter" as one where the Conclusion does follow from the Premises, tho' there be still something faulty in the procedure.

In this latter case (where the Conclusion does follow) one may either object to the *Premises* as being "unduly-assumed," or to the *Conclusion*, as *irrelevant;* that is, different, in some way, from what *ought* to have been proved,—namely, from what was originally maintained, —from what had been undertaken to be established,—from what the particular occasion requires; &c.

These that have been mentioned (as the "Fallacies-in-form," and "in-matter") must evidently include *every possible* Fallacy; since whatever objection can be brought against any argument or apparent-argument, must be an objection either against the *Conclusion*, or against the *Premises*, or against the *connexion between* the premises and conclusion; that is, against the *conclusiveness* of the apparent argument.

§ 2. "Fallacies-in-form" [in which the Conclusion does not really follow from the Premises] are such as we have already given examples of, as violations of the rules above-explained: such as "undistributed-middle," —"illicit-process" &c.

Among others was noticed the fault of an "*equivocal* Middle-term," taken in one sense in the one premise, and in a different sense in the other. And since this Fallacy turns on the *meaning of words*, and not on the mere form in which the argument is expressed, some may be disposed to rank it rather under the Head of "Fallacies-in-matter."

The most convenient course however will be to keep to the division already laid down; and accordingly, to reckon the Fallacy of "equivocal-middle" along with all the others in which the Conclusion *does not follow* from the Premises.

And in truth the technical rules do apply to this,—the "Fallacy of equivocation"—*as soon as* it is ascertained that the Middle-term *is* employed in two different senses, and consequently is, in reality, not one, but *two* terms.

But of course the rules of Syllogism do not, alone, enable us to ascertain the meaning or meanings of any Term. *That* must be judged of from our knowledge of the subject-matter,—from the *context*, [or general *drift* of the discourse]—and often from what we know or believe concerning the writer or speaker.

And the same may be said, in many cases, in respect of not only the *signification*, but also the *distribution* or non-distribution, of a Term; in which depend the Fallacies of "undistributed-middle" and "illicit-process." For when a Proposition is expressed *indefinitely* (as, "Man invents arts;" "Man is mortal;") we are left to judge from the subject-matter &c. whether it is to be understood as Universal or as Particular.

And again, the sign "all," (which, in an Affirmative proposition, denotes Universality) in a Negative-proposition, *generally*, tho' *not invariably*, indicates a *Par-*

ticular; that is, usually, tho' not always, the negation is understood as a *negation of universality.* For instance, of these two propositions, "all they that trust in Him shall not be confounded," and "we shall not all sleep," the one would be understood as Universal, and the other, as Particular.

Observe also that the sign "all" is sometimes understood as meaning "all-*collectively*;" sometimes "everyone, *separately.*" As "*all* the apples on that tree are enough to fill a bushel:" i.e. all *together:* and "they are *all* ripe;" i.e. *every one.*

§ 3. You are to observe that we cannot always decide absolutely as to *which* Class we should pronounce some particular fallacy to fall under, those in "form" or those in "matter:" because it will often happen, when an argument is stated (which is usually the case) as an *Enthymeme,* that the *suppressed* premise may be *either* one which is *false,* but which *would,* if granted, make the Syllogism complete: or else one which is *true,* but which would *not* complete a regular Syllogism. Now on the former supposition, the Fallacy would be in the "*matter*;" on the other supposition, it would be in the "*form.*"

For instance, in this Enthymeme, "The Country is distressed; therefore it is misgoverned," we cannot decide absolutely whether the premise meant to be understood, is, "every Country that is distressed is misgoverned;" which would make the *syllogism* correct, but would not be admitted as true; or, "every Country that is misgoverned is distressed;" which would leave the Middle-term undistributed.

And again, when both Premises are expressed, it will often happen (as in an example formerly given) that we have the *alternative* of *either* denying the *truth* of one of the premises,—supposing the Middle-term used in the *same* sense in both,—or denying the *conclusiveness* of the argument, supposing the Middle-term used in *each premise* in such a *sense as to make that premise true.* If by "*contrary to experience*" you mean *two different* things, in the two premises, respectively, then, each is, by itself, true, but they prove nothing: if you mean by it the *same* in both premises, then, one of them is untrue.

§ 4. But observe, that when you mean to charge any argument with the fault of "equivocal-middle," it is not enough to say that the Middle-term is a word or phrase which *admits* of more than one meaning; (for there are few that do not) but you must shew, that in order for each premise to be admitted, the Term in question must be understood in one sense (pointing out *what* that sense is) in one of the premises, and in another sense, in the other.

And if any one speaks contemptuously of "over-exactness" in fixing the precise sense in which some term is used,—of attending to minute and subtle distinctions, &c. you may reply that these *minute* distinctions are exactly those which call for careful attention; since it is *only* thro' the neglect of *these* that Fallacies ever escape detection.

For, a very *glaring* and palpable equivocation could never mislead any one. To argue that "feathers dispel darkness, because they are *light,*" is an equivocation which could never be employed but in jest. And yet however slight in any case may be the distinction between the two senses of a Middle-term in the two premises, the apparent argument will be equally inconclusive; tho' its fallaciousness will be more likely to escape notice.

Even so, it is for want of attention to *minute* points that houses are robbed or set on fire. Burglars do not in general come and batter-down the front-door; but climb in at some window whose fastenings have been neglected. And an incendiary, or a careless servant, does not kindle a tar-barrel in the middle of a room, but leaves a lighted turf, or a candle-snuff, in the thatch, or in a heap of shavings.

In many cases, it is a good maxim, to "take care of little things, and great ones will take care of themselves."

§ 5. Of the Fallacies of "undistributed-middle," and of "illicit-process" &c. (which have been formerly explained) no more need be said in this place.

But in respect of the "Fallacy of equivocation" it is worth while to notice briefly some of the different modes in which a word or phrase comes to be employed in several senses.

i. That may be reckoned an *accidental* equivocation, in which there is no *perceived* connexion between the different senses. Thus "pen" is an instrument for writing, or an enclosure for cattle; "turtle" a kind of bird, and a kind of tortoise: and "case" is used (as was noticed in Lesson VII. § 3.) in three senses. Of this kind is the ambiguity of several proper-names (as John, Thomas &c.) also noticed in the same place.

ii. There are several words which are ambiguous from being employed in what is technically called a "*first-intention*" and a "*second-intention.*"

A "Second-intention" of any word is that signification which it bears in reference to some particular art, science, study, pursuit, or system: and its first intention is its ordinary colloquial sense when there is no such reference.

Thus, the ordinary signification of the words "ship," "beast," and "bird," every one knows; but sailors *limit* the word "ship" to vessels of a certain construction; "beast" is the word applied by farmers in some parts, especially, and exclusively, to the "*ox*-tribe;" and "bird" is used in a "Second-intention" by sportsmen, to signify "partridge."

§ 6. It is evident that a word may have several different "Second-intentions," according to the several systems &c. into which it may be introduced as one of the technical-terms.

Thus "line" is technically employed in Geometry, in Geography, in the Military-art, in the art of Angling, in Printing &c.

The word "*Species*" is employed by *Naturalists* in a certain "Second-intention" when they are speaking of organized-beings.

The ordinary sense ["first-intention"] of the word, is that which has been explained in these Lessons: but Naturalists restrict it to such a class of animals or plants as are supposed to have *descended from a common Stock.*

In ordinary discourse any one would say that a "Greyhound" or a "Mastiff" is a kind ["Species"] of dog: but a Zoologist would say (in technical language) that these are only "*Varieties,*" and that all dogs are of one *Species.* So also, in common discourse any one would speak of "Cauliflower," and several others, as "kinds" of "Cabbage:" but the Botanist reckons all these as "varieties" of the single Species, Cabbage.

Those in short which are (in the technical language of these Lessons) the "lowest-Species" that the Naturalist treats of, are called by him, not Species, but *Varieties;* and again those classes *under* which his Species come, he never calls *Species* of a higher Genus, but *Genera, Orders* &c.

Much confusion of thought has often arisen from overlooking this technical-sense ["second intention"] of the word "Species."

In some instances the "second-intention" [or philosophical sense] of a word, is,—instead of being more *limited,*—more *extensive* than the "first-intention" [or, popular sense.]

Thus, "affection," which is limited, in popular use, to "love," is employed by philosophers as comprehending both "benevolent and malevolent affections." So also "charity" which is often in popular use confined to "almsgiving"—"flower," to such flowers as have "conspicuous petals,"—and "fruit" to such fruits as are "eatable," have each a technical second-intention, which is more extensive.

§ 7. iii. A word will often be employed to denote (in different senses) two things which have a "*resemblance,*" or an "*analogy*" to each other.

A "blade," of *grass*, or of a *sword*, have the same name from the direct resemblance between the things themselves. But instances of this kind are far less common than those in which the same name is applied to two things, not from their being *themselves* similar, but from their having *similar relations* to certain other things. And this is what is called "Analogy."

Thus, the "sweetness" of a "sound" and of a "taste" can have no *resemblance:* but the word is applied to both, by *analogy*, because as a "sweet" taste *gratifies* the palate, so does a "sweet" sound, the ear.

Thus also we speak in the "secondary" [or "transferred," or "analogical"] sense, of the "hands" of a Clock —the "legs" of a Table,—the "foot" of a Mountain,— the "mouth" of a River &c. which words in their "primary" ["proper," or original] sense, denote the "hands" of a man,—the "legs, foot, and mouth" of animals; from the *similar relations* in which they stand to other things, respectively, in reference to use, position, action &c.

The words pertaining to *Mind* may in general be traced up, as borrowed (which no doubt they all were, originally) by Analogy, from those pertaining to *Matter:* though in many cases the primary sense has become obsolete.

Thus, "edify*" in its primary sense of "build up†" is disused, and the origin of it often forgotten; altho' the substantive "edifice" remains in common use in a corresponding sense.

When however we speak of "weighing" the reasons on both sides,—of "seeing," or "feeling" the force of an argument,—"imprinting" anything on the memory, &c. we are aware of these words being used analogically.

It is in an analogical sense that "Division," "Part," and several other technical terms have been employed in these Lessons.

§ 8. There are two kinds of error, each very common, —which lead to confusion of thought in our use of analogical words:

i. The error of supposing the *things themselves* to be similar, from their having *similar relations* to other things.

ii. The still commoner error of supposing the Analogy to *extend further* than it does; [or, to be more *complete* than it really is;] from not considering *in what* the Analogy in each case consists.

For instance, the "*Servants*" that we read of in the Bible, and in other translations of ancient books, are so called by Analogy to servants among us: and that Analogy consists in the offices which a "servant" performs, in waiting on his master, and doing his bidding. It is in this respect that the one description of "servant" "corresponds" ["answers"] to the other. And hence some persons have been led to apply all that is said in Scripture respecting Masters and *Servants*, to these times, and this Country: forgetting that the Analogy is not *complete*, and extends no further than the point abovementioned. For the ancient "servants" (except when expressly spoken of as *hired*-servants) were *Slaves;* a part of the Master's *possessions.*

§. 9. iv. A word will often (in different senses) be applied to two things, connected, not by Resemblance or Analogy, but by the circumstance of *time or place*, as being "Cause and Effect," or "Part and Whole," &c.

Thus, when we say "the fire gives *heat*," and "I feel *heat*," it is plain that the "heat" of the fire is not a *sensation* in the fire, and cannot resemble or be analogous to a sensation; but is the *cause* of the "sensation" of "heat" in me.

This kind of transfer of a word from its "primary' to a Secondary sense, is called "***Metonymy.***" It is thus we speak of a "Crown," or a "Throne" for "regal-power;" "the sword," for "war;" a "voice," for a "declaration;" and a man is said to be "*worth*" such and such a sum of money; meaning that he *possesses property that is worth* so much, &c.

Much confusion of thought, and many Fallacies, have arisen from inattention to this source of ambiguity*. It seems strange, but it is quite true, that things have often been in this way confounded together which have not the least Resemblance or Analogy to each other.

A remarkable instance of this is to be found in the "primary" and "secondary" uses of such words as "*same*"—"*one*"—"*identical*" &c. In the primary sense they imply "*numerical unity*," [individuality] and do *not* imply, necessarily, any *similarity*. For when we say of any grown man that he is the "*same* person" whom we remember to have seen when an infant, this is not from his now *resembling* an infant. *Another* infant, now, would be much more like what he then was.

In the secondary sense, on the other hand, these words imply *nothing but* exact—or nearly exact—*similarity*. For instance if a man finds in a mine some metal which turns out to be gold with a small alloy of copper, he would say, it is the *same* metal of which coins, or of which watches are made; not meaning of course that one single piece of metal can be in two places at once; but only, that there is a perfect similarity.

So also, several persons are said to be in *one and the same* posture, when they are all *placed alike*; and to have "one and the same" *idea* in their minds, when they are all thinking alike. (See Lesson VII. § 8.)

[*This Lesson will be concluded in the next Number.*]

* See Peter i., ch. 2., v. 5.
† See Johnson's *Dictionary.*

* The ambiguity of the word "Division" when used to signify one of the *portions* into which anything is divided (see Lesson XV., § 6) is of this kind.

REFLECTIONS ON LIGHT.

Light—from whose rays all beauty springs,
Darkness—whose wide expanded wings,
Involves the dusky globe:
Praise Him who, when the heavens he spread
Darkness his thick pavilion made,
And light his regal robe.—Merrick.

Let there be light! said God, and forthwith light
Ethereal, first of things, quintessence pure,
Sprung from the deep; and from her native east,
To journey the airy gloom began,
Sphered in a radiant cloud.—Milton.

Nothing in this great Creation, impressed as it everywhere is with miracles of wisdom and excellence, is more beautiful and marvellous than Light, the elder work of Deity—the master-piece of his material phenomena, and the original communication of Himself when he opened the treasures of his bounty. Light was the commencement of our world, and it continues to be the soul of every beauty which it contains.

From this inexhaustible source nature derives all her colouring and lustre, the rainbow its tints, the landscape its beauties, and every feature in that glorious picture of divinity so legibly impressed on the whole creation, its brilliancy and sweetness. All creatures, animate and inanimate, seem to vie with each other, by heightening, as by common consent, the blessing of light. The birds warble their salutations on its daily appearance, and greet its faintest rays by their liveliest strains. The flowers and vegetable tribes revive at its approach, and at the opening of the day they expand their leaves to welcome with silent, but grateful sensations, its auspicious return.

We perceive no beauty or excellence in the most elegant objects, even by the help of the clearest optics, and through the purest medium, without light. In its absence all nature looks black and cheerless. By means

of this glorious and celestial phenomenon, which spreads like a luminous mantle through the Universe, and makes all things assume an aspect of comeliness and gaiety, organization and vitality are everywhere diffused over the surface of the globe: hereby we contemplate the majesty of the heavens, and are charmed with the beauties of the earth. Independently of the magnificent objects and captivating scenes which it thus presents in so much lustre, we find our whole frame instinctively affected, our spirits enlivened, our hearts gladdened, and our minds sensibly raised and gratified in its presence.

No wonder that light is so frequently used by the sacred oracles as the symbol of our best blessings. Of the Gospel-revelation one apostle says, *The night is far spent, and the day is at hand.* Another, under the impression of the same auspicious event, thus applied the language of ancient prophecy:—*The people who sat in darkness have seen a great light; and to them which sat in the region and shadow of death light is sprung up.*

We are all naturally ambitious to shine in the world. It is the foible of our race; but the fault lies, not in the passion itself, but in mistaking the sphere, and choosing improper objects. Many are proud to shine in the lustre of pomp, the elegance of dress, or the splendour of equipage; others, again, are ambitious of the voice of fame, or the acquisition of power. To such as act by the opinion of the world alone, fashion is above all other laws. They study nothing but appearance. This object absorbs other appetites, passions, principles, and duties. But religion alone will teach from what principle, in what manner, and by what means to shine in the world.

The subtilty and activity of light far exceed all human comprehension. Its effects upon animal bodies are seen in the various tinges they assume, according to the nature of the light to which they are exposed. Thus, in high northern latitudes, animals, during the absence of the solar light, become white, and in proportion to the action of light upon them, they are a darker colour.

Nor is the influence of light less powerful upon the vegetable tribes. Every plant, in fact, may be denominated a heliotrope, though the term is confined only to such flowers as exhibit a striking direction towards the sun. But in the privation of light, it is well known that the leaves of vegetables lose their colour; and that they acquire again their verdure according to the degree of light to which they are exposed.

Light is diffused throughout the whole universe, and is in continual exercise for the preservation of all bodies, yet never actually confined to any; so that the questions in Job are as philosophical as they are elegantly poetical: *Where is the place where light dwelleth? and as for darkness, where is the place thereof, that thou shouldest take it to the bound thereof, and that thou shouldest know paths to the house thereof?* Job (xxxviii. 19, 20.)

The inspired writers seem to have been particularly fond of this image, it representing, as far as anything in the creation can possibly represent, the purity of the Divine Essence: GOD IS LIGHT: *and in Him is no darkness at all.* (1 John i. 5.)

The salutary and enlivening effects of light upon the heavens and the earth, upon all substances in nature and upon every order of beings throughout the visible creation, do certainly afford a lively illustration of the infinite knowledge, power and goodness of God. All things are open to him, and not a single movement of the mind can escape his observation; his eye penetrates through all recesses of nature, and examines the motive of every action of man. What a tremendous consideration is this; and how should it continually operate upon us, in making us watchful over the thoughts of our hearts!

Now, if material light be so glorious and so extensively beneficial, how much greater must be the glory and value of a communion with the ineffable Fountain of all truth; and if light be essential to our present convenience, and indeed to our very being in this world, how much more essential is divine light to our mental comfort and to our spiritual existence. May this marvellous and majestic light, in whose splendour all created luminaries are lost and extinguished, shine into our hearts, and give us *the knowledge of God in the face of His Son, Jesus Christ!* Happy they on whom it dawns immortal day: who anticipate by faith the fruition it imparts: who are even now admitted to a participation of its pleasures; pleasures which neither cloy nor diminish, and will never have an end; but which shall survive not only our frail bodies, but sun, moon, and stars, and the glories of the universe; which the shadows of death cannot cloud which the gloom of the grave cannot darken; but which are substantial as the throne of God, and bright as the visions of eternity.

[Abridged from BASELEY'S *Glory of the Heavens.*]

SUNRISE.

OH! if our eyes could look into the hearts
Of human dwellings standing quietly
Beneath the sunrise in sweet rural spots,
Far from all stir, and haply green and bright
With fragrant growth of dewy leaves and flowers,
Where bees renew their murmuring morn, and birds
Begin again to trill their orisons,
Nature and life exchanging their repose
For music and for motion, happier both,
And in their happiness more beautiful
Than sleep with all its dreams.—Oh! if our eyes
Could penetrate these consecrated walls,
Whose stillness seems to hide an inward bliss
Diviner than the dawn's, what woful sights
Might they behold! Hands clasp'd in hopeless prayers
By dying beds, or pale cheeks drench'd in tears
Beside cheeks paler far, in death as white
As the shroud-sheets on which the corpses lie;
Or tossings of worse misery far, where Guilt
Implores in vain the peace of Penitence,
Or sinful passion, struggling with remorse,
Becomes more sinful, in its mad desire
To reconcile with God's forbidding laws
A life of cherish'd vice, or daringly
Doubts or denies eternal Providence!

Where, then, would be the beauty—where the bliss
Of dawn that comes to purify the earth
And all that breathes upon it, at the hour
Chosen for her own delight by Innocence!

* * * *

The fairest things in nature sympathize
In our imaginations with our life,
Only so long as we are virtuous;
Nor lovely seems the lily nor the rose,
When our white thoughts have all been streak'd by sin,
Or guilt hath bathed them in appalling hues
Of its own crimson, such as Nature sheds
On no sweet flowers of hers, though they are bright
On earth as setting suns are bright in heaven.

[*Unimore, a Dream of the Highlands*, by JOHN WILSON.]

SUNSET.

Lo! the sun is setting; earth and sky
One blaze of glory—what but now we saw
As though it were not, though it had not been;
He lingers yet; and lessening to a point,
Shines like the eye of Heaven—then withdraws;
And from the zenith to the utmost skirts
All is celestial red! The hour is come
When they that sail along the distant seas
Languish for home; and they that in the morn
Said to sweet friends "Farewell," melt as at parting.
When, journeying on, the pilgrim if he hears,
As now we hear it, echoing round the hill,
The bell that seems to mourn the dying day,
Slackens his pace and sighs, and those he loved
Loves more than ever. Who but feels it not?

ROGERS.

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